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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,732	09/04/2003	Yukio Ohtaki	9281-4649	7366

7590 03/19/2007  
Brinks Hofer Gilson & Lione  
P.O. Box 10395  
Chicago, IL 60610

EXAMINER
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CORRIELUS, JEAN B

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/654,732	OHTAKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jean B. Corrielus	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/4/03 and 12/12/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: the specification including the abstract recites "time area" and "frequency area" in several locations, to refer to a signal converted to time and frequency, respectively. However, it is well accepted that a signal expressed in time or frequency is a "time domain" or "frequency domain" signal. Therefore it is suggested that "time area" and "frequency area" be replaced by "time domain" or "frequency domain".

Appropriate correction is required.

### ***Claim Objections***

2. Claim 1-12 are objected to because of the following informalities: the claim recites "time area" and "frequency area" in several locations, to refer to a signal converted to time and frequency, respectively. However, it is well accepted that a signal expressed in time or frequency is a "time domain" or "frequency domain" signal. Therefore, it is suggested that "time area" and "frequency area" be replaced by "time domain" or "frequency domain". In addition, "base band" should be replaced by "baseband". Claim 1, lines 9-11, should be rewritten as follow so as to improve the claim language "wherein each OFDM demodulator is coupled to a respective antenna group, each antenna group containing at least two of the at least four antennas"

Note that the same comment applies to claims 2-12, respectively, because of their dependency to claim 1.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 9-12, the limitations, "a first phase shifter is arranged on a former stage side " and "arranged at a latter stage" are unclear.

5. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: claim 1 (embodiment of any one of fig.1-3) requires that the output of each antenna groups (1 and 5) are combined in a combiner (32) to provide the baseband signal to input each demodulator (35 and 75), a phase shifter (31, 71) is required to be coupled to a first one of each antenna group and combiner and a first control circuit (33-34) coupled to the input of each demodulator and to a second input of each phase shifter, the claim further requires that the second phase shifter is coupled to an output of one of the demodulator, and a second control circuit 91 coupled to the output of the plurality of demodulators and to a second input of the second phase shifter, a second combiner coupled to an output of the second phase shifter and the output of the second

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demodulator to provide an output. If claim 1 is amended to include the missing limitations, Claim 2, claim 6, claim 7, claim 11, and claim 12, now very hard to read, will be redundant and will be required to be canceled.

Claim 3 reads on the embodiment of fig. 1 requires that the each antenna in each antenna group be coupled to a respective receiving portion for frequency converting the high frequency signal to an intermediate frequency signal and an A/D converter coupled to each receiving portion for converting the "intermediate frequency signal" to a respective digital signal the claim further requires that the output of a first one of the A/D converters is provided to the first combiner and the output of the other A/D converter be provided to the phase shifter 31.

Claim 5 reads on the embodiment of fig. 5 and requires that each antenna in each antenna group be coupled to a receiving portion for frequency converting the high frequency signal to an intermediate frequency signal the claim further requires that the output of a first one of the receiving portions is provided to the first combiner and the output of the second one of the receiving portions be provided as the first input to the phase shifter.

***Allowable Subject Matter***


6. Claims 1, 3-5, 8, 9 and 10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jean B Corrielus  
Primary Examiner  
Art Unit 2611

3-15-07